Mock Board Exam

STD: XII | **SUBJECT: Chemistry** | **ASSESSMENT: Mock Test**
Maximum marks : 35 | **12/3/2022 11:00 - 12/3/2022 22:30** | **Time Limit : 90 Minutes**

All questions are compulsory
The intended marks for questions or parts of questions are given in brackets.
Balanced equations must be given wherever possible and diagrams where they are helpful.
When solving numerical problems, all essential work must be shown.
In working out problems, use the following data:
Gas constant R = 1.987 cal/deg-mol = 8.314 J/K-mol = 0.0821 dm^3- atm/ K-mol, 1 L atm = 1 dm^3 atm = 101.3 J, 1 Faraday = 96500 coulombs. Avogadro's number = 6.023×10^23.
A students has to answer a question either by typing it out, in the space provided, or writing down each answer on paper, and uploading a picture of it using the upload option.
A student is advised to write the answers in a clear, legible handwriting using a blue/black ball point pen before uploading it.

Section A

7 Marks

3 Marks

Fill in the blanks by choosing the appropriate word(s) from those given in the brackets:

(Tranquilizer, Propane, Antiseptic, Dextrorotatory, Antipyretic, Ethanol, Methanol, Laevorotatory, Ethane)

1 Aspirin Analgesics have _____ Property and Equanil Employed as a _____. **1 M**

2 Sucrose is a _____compound and the product mixture obtained from its hydrolysis is _____ in nature. **1 M**

3 Acetaldehyde reacts with $Zn - Hg,\ conc\ HCl$ to form ___ and when it reacts with H_2, Ni _____ is formed. **1 M**

4 Marks

Select and write the correct alternative from the choices given below.

4 The half-life period of a first order reaction is 20 minutes. The approximate time required for the concentration of the reactant to change from $0.16\ M$ to $0.02\ M$ is: **1 M**

(A) 80 minutes (B) 60 minutes (C) 20 minutes (D) 40 minutes

5 Gold number is a measure of: **1 M**

(A) The amount of gold present in a colloidal solution

(B) The amount of gold required to coagulate a colloidal solution

(C) The amount of gold required to protect the colloid

(D) None of these

6 Which of the following is not an antimicrobial? **1 M**

(A) Antiseptics (B) Antibacterial drugs (C) Anaesthetics

(D) Disinfectants

7 Assertion: Number of unpaired electrons in $Fe(CO)_5$ is four. **1 M**

Reason: CO is a strong field ligand.

(A) Assertion is correct but Reason is wrong.

(B) Assertion is wrong but Reason is correct.

(C) Assertion and Reason are correct and Reason is the correct explanation of Assertion.

(D) Assertion and Reason are correct and Reason is not the correct explanation of Assertion.

Section B

16 Marks

16 Marks

8 Rate constant k for a first order reaction is found to be $2.632 \times 10^{-3}\ s^{-1}$. **2 M**

Calculate its $\frac{3}{4}^{th}$ life. (log 4 = 0.6)

9 Write hybridisation and geometry of the following complexes: **2 M**

(a) $[Ni(CN)_4]^{2-}$

(b) $[CoF_6]^{3-}$

10 Illustrate the following reactions giving a chemical equation in each case: **2 M**

(a) Gabriel phthalimide synthesis

(b) Hofmann's bromamide reaction

OR

How will you bring about the following conversions? (Give equation) **2 M**

(a) Ethanol to acetone

(b) Benzoic acid to benzaldehyde

11 What is Lanthanide contraction? Why is Europium (II) more stable than Cerium (II)? **2 M**

12 (i) How will you differentiate aniline and ethylamine by chemical mean? **2 M**

(ii) Arrange the following in increasing order of basic strength.

Aniline, p-Nitroaniline, p-Toluidine

13 Give Reasons: **2 M**

(i) Mn shows the highest oxidation state of $+7$ with oxygen but with fluorine it shows highest oxidation state of $+4$.

(ii) Transition metals show a variable oxidation state.

14 Predict the product of the following Reactions: **2 M**
(i) When D-glucose is treated with Bromine water
(ii) When D-glucose is treated with HI on prolonged heating

15 Give one chemical test for each to distinguish between the following pairs of compounds: **2 M**
(i) Acetophenone to benzophenone
(ii) Ethanal to propanal

Section C

12 Marks

Answer Either Group 1 OR Group 2. Group 3 and 4 are compulsory groups.

Group 1 **3 Marks**

16 Define activation energy and discuss the effect of positive catalyst on the rate of reaction. **1 M**

17 For a certain first-order reaction, 75 % of the reaction is completed in 30 min. How much time in minute will it require to complete 99.9 % of the reaction? (log 4=0.6) **2 M**

OR

Group 2 **3 Marks**

Answer the following:

18 The slope of the line for the graph of $\log\ k$ versus $\frac{1}{T}$ for the reaction, $N_2O_5 \longrightarrow 2NO_2 + \frac{1}{2}O_2$ is -5000. Calculate the energy of activation of the Reaction in $kJ\ mol^{-1}$. **2 M**

19 The overall order of reaction between X and Y is 3. Write the rate equation, if on doubling the concentration of X, the rate of reaction gets doubled. **1 M**

Group 3 **6 Marks**

20 How do antiseptics differ from disinfectants? **2 M**

21 Name a substance which can be used as an antiseptic as well as a disinfectant. **1 M**

22 Write the formula of the following compounds: **2 M**
(a) Potassium trioxalatoaluminate (III)
(b) Hexaaquairon (II) sulphate

23 The IUPAC name of $[Pt\,(NH_3)_3\,(Br)\,(NO_2)\,(Cl)]\,Cl$ is: **1 M**

Group 4 **3 Marks**

24 Give reason for each of the following: **3 M**

(i) Physisorption decreases with an increase in temperature.

(ii) Brownian movement stabilizes colloidal solutions.

(iii) Lyophilic colloidal solutions are more stable than lyophobic colloidal solutions.